Having thus described the preferred embodiments, the invention is now claimed to be:

1. A method of deactivating biological or chemical agents in a large volume space with a convoluted configuration, the method comprising:

isolating the space;

introducing a deactivation gas into a plurality of subregions of the isolated space, which subregions are physically interconnected;

circulating the deactivation gas within each subregion and from subregion to adjoining subregions; and,

continuing to introduce and circulate the deactivation gas until any biological or chemical agents in the space are deactivated.

2. The method according to claim 1, further including:

exhausting air, spent deactivation gas, and deactivation gas from the space; and,

trapping any entrained biological or chemical agent in the exhausted air, spent deactivation gas, and deactivation gas.

3. The method according to claim 2 further including:

sensing a concentration of the deactivation gas at a plurality of points around the isolated space; and,

controlling the introduction and circulation of the deactivation gas and the exhausting such that the deactivation gas concentration throughout the space is maintained above a preselected minimum concentration and below a preselected maximum concentration.

4. The method according to claim 3 further including:

sensing temperature at a plurality of locations around the space; and,

wherein the preselected maximum concentration is a saturation or condensation concentration at the sensed temperature.

5. The method according to claim 3 wherein controlling the introduction and circulation of the deactivation agent includes flow dynamics modeling.

6. The method according to claim 3 wherein the sensing includes:

altering a resonance frequency, a capacitance, or other electrical property of a sensing element with the deactivation gas.

7. The method according to claim 1 wherein the deactivation gas includes hydrogen peroxide vapor.

8. The method according to claim 1 wherein introducing the deactivation gas includes:

vaporizing a liquid deactivation concentrate to generate the deactivation gas.

9. The method according to claim 8 wherein the vaporizing step is performed one of:

within HVAC systems for heating and cooling the space;

at a plurality of generators built into the space;

at portable generators movably placed within the space.

10. The method according to claim 2 further including:

before introducing the deactivation gas, exhausting to bring the space at a negative pressure.

11. An apparatus for deactivating biological or chemical agents in a large volume space with a convoluted configuration, the apparatus comprising:

means for introducing a deactivation gas into a plurality of subregions of the space, which subregions are physically interconnected;

means for circulating the deactivation gas within each subregion and from subregion to adjoining subregions; and,

means for controlling introduction and circulation of the deactivation gas until biological or chemical agents in the space are deactivated.

12. The apparatus according to claim 11 further including:

a multiplicity of sensors for sensing a concentration of the deactivation gas at a plurality of points around the space; and,

wherein the controlling means controls the introduction and circulation of the deactivation gas such that its concentration throughout the space is maintained above a preselected minimum concentration and below a preselected maximum concentration.

13. The apparatus as set forth in claim 12 further including:

means for sensing temperature at a plurality of locations around the space; and,

wherein the preselected maximum concentration is a saturation or condensation concentration at the sensed temperature.

14. The apparatus as set forth in claim 12 wherein the means for controlling the introduction and circulation of the deactivation agent includes means for flow dynamics modeling.

15. The apparatus according to claim 12 wherein the deactivation gas includes hydrogen peroxide vapor.

16. The apparatus according to claim 12 wherein the means for introducing the deactivation gas includes:

a vaporizer for vaporizing a liquid deactivation concentrate to generate the deactivation gas.

17. The apparatus according to claim 6 wherein the vaporizer is disposed one of:

within HVAC systems for heating and cooling the space;

built into the space;

portable generators movably placed within the space.

18. The apparatus according to claim 12 further including:

means for exhausting air, spent deactivation gas, and deactivation gas from the space; and

a trap which traps any entrained biological or chemical agent in the exhausted air, spent deactivation gas, and deactivation gas.

19. The apparatus according to claim 18 further including:

a plurality of exhaust fans for exhausting the air, spent deactivation gas, and deactivation gas at a plurality of locations within the isolated space; and

the control means further controlling exhaust fans to control flow of the deactivation gas along and around the space.

20. The apparatus according to claim 18 further including:

automatic door closers and doors for isolating the space from the environment before introducing the deactivation gas.

21. The apparatus according to claim 11 wherein the space is an elongated space and includes multiple interconnected floors with a free flow of air between floors.

22. The apparatus according to claim 21, wherein the space includes an airport concourse.

23. The apparatus according to claim 11, wherein the space includes a wing of a building including corridors, individual offices or rooms, cubicles, or laboratories.

24. The apparatus according to claim 11, wherein the air circulating means includes:

a plurality of fans; and,

wherein the control means controls a speed and orientation of at least some of the fans.

25. The apparatus as set forth in claim 12, wherein each of the sensors includes:

an electrical element whose electrical properties are altered in accordance with at least concentration of the deactivation gas.

26. The apparatus according to claim 25 wherein the sensor includes:

a piezoelectric resonator having a characteristic resonance frequency; and,

a coating on at least one surface of the resonator which coating interacts with the deactivation gas and changes the resonance frequency of the resonator in accordance with a concentration of the deactivation gas.

27. The apparatus according to claim 25 wherein the sensor includes:

a pair of capacitive plates between which deactivation gas is passed such that a dielectric constant of the space between the dielectric plates varies in accordance with a concentration of the deactivation gas.

28. The apparatus according to claim 25 wherein the sensor includes:

a resonator whose resonance frequency changes in accordance with a concentration of the deactivation gas.

29. The apparatus according to claim 18 wherein the control means includes a computer which includes:

a routine for monitoring each of the sensors;

a process control routine which controls the deactivation gas generators, the exhaust fans, and the circulation means in accordance with the sensed deactivation gas concentrations.

30. The apparatus according to claim 29 wherein the computer processor further includes:

a routine for automatically closing all portals into the space to seal the space from the surrounding environment.

31. A computer control system for controlling deactivation of biological and chemical agents in a large volume space with a convoluted configuration, the computer control system including a processor which is programmed with:

an algorithm for controlling isolation of the space;

a routine or algorithm for controlling introduction of a deactivation gas into a plurality of subregions of the isolated space, which subregions are physically connected;

a means for controlling circulation of the deactivation gas within each subregion and from subregion to adjoining subregions;

a means for monitoring a multiplicity of concentration sensors; and

a means for controlling at least one exhaust fan.